

Complex programs

Ecological footprint

2.3



CLIMATE CHANGE AREA

- overall presentation
- reasons for climate change



AGE

- 12-15



TYPE OF USAGE

- formal education
- informal education



DURATION

- Preparation: 20 min
- Activity: 30-45 min



PLACE OF EXERCISE

- indoor setting

Summary

Humanity's current way of life is not sustainable in the long term. The residents of developed countries are consuming an excessive amount of natural resources, more than their fair share, to fulfill their immediate needs, disregarding the well-being of citizens in other countries and future generations. These facts are introduced to the participants through the concept of the ecological footprint.

KEYWORDS

ecological footprint; natural resources; living standards; population; justice

PREREQUISITE KNOWLEDGE IS

- needed
- not needed

LEARNING OBJECTIVES

- Introducing the concept of the ecological footprint.
- Recognizing the natural resources, we use to satisfy our everyday needs
- Recognizing by distributing the Earth's resources equitably, we can halt overconsumption.
- Reflecting on the concept of justice.

METHODS

- discussion
- hands-on activity
- measurement and estimation
- teamwork

TOOLS AND MATERIALS

- country cards cut out from the attachments
- approx. 3 sheets of A4 cardboard/slides (paper can also be used)
- scissors
- glue or stapler
- pencil
- ruler or tape measure
- thick marker
- blu tack
- Optional: World map with countries displayed on a blackboard or projected (alternatively, draw one on wrapping paper)

PREPARATIONS

Cut out the country cards from the attachments. Prepare the necessary tools for the activity. Optionally, create the standard footprint (the „etalon“) measuring 1.8 gha (25 cm long, 8 cm wide) prior to the activity.

ARRANGING THE PLACE

Arrange the participants in a circle, leaving enough open space in the middle for everyone to stand comfortably.

Ecological footprint

DESCRIPTION

Begin by explaining the concept of the ecological footprint to the participants.

In order to meet human needs, we must rely on natural resources. The planet provides essential resources such as water, land, vegetation, sunlight, and air, which are crucial for sustaining life on Earth. It is imperative to protect and preserve these renewable resources to maintain ecosystem stability. However, we must also recognize that these natural resources are not infinite due to the size of our planet. As we disrupt the systems that renew these resources, the Earth's carrying capacity significantly diminishes.

Improving the efficiency of resource utilization and ceasing exploitation can potentially increase Earth's carrying capacity, but it remains finite. Unfortunately, these utilization practices often compromise regeneration systems, resulting in an overall decrease rather than an increase in carrying capacity. For instance, intensive irrigated agriculture may lead to soil salinization, depletion, increased erosion, pollution of surface and groundwater, and the displacement of valuable semi-natural ecosystems. While such practices may temporarily increase yields for a few years or decades, they inevitably lead to a sharp decline for centuries thereafter.

To assess the extent of our consumption compared to the land's productivity, the concept of ecological footprint has been developed. This concept allows us to compare different natural resources by quantifying the amount of land required for their production. The ecological footprint reveals the land area necessary to sustain the consumption of goods without causing long-term harm to the production areas and neutralize our emissions (including waste, carbon dioxide, pesticides, wastewater, etc.). It's important to note that pollution of water, air, and soil is also considered a form of resource consumption. Since the productivity of one hectare of land can vary significantly depending on geographical location and cultivation type, an adjustment factor is applied to determine average values. Hence, the ecological footprint is measured in global hectares (gha). An individual's ecological footprint depends on their lifestyle, the amount of goods they possess and consume, as well as the efficiency with which these goods were produced and the resources utilized in the process.

The ecological footprint (EF) per capita (per person):

$$EF_{Per\ capita} = consumption \times efficiency \ [gha / person]$$

The ecological footprint depends on the number of people considered.

The ecological footprint of humanity is:

$$EF_{Humanity} = EF_{Per\ capita} \times population \ [gha]$$

$$EF_{Humanity} = population \times consumption \times efficiency \ [gha]$$

The ecological footprint of countries can be calculated in the same way.

$$EF_{Per\ capita} = consumption \times efficiency \ [gha / person]$$

The ecological footprint, naturally, varies depending on the number of people considered.

Therefore, the ecological footprint of humanity can be expressed as follows:

$$EF_{Humanity} = EF_{Per\ capita} \times population \ [gha]$$

$$EF_{Humanity} = population \times consumption \times efficiency \ [gha]$$

The ecological footprint of individual countries can be calculated in a similar manner.

Biocapacity reveals the ecosystem's ability to generate renewable resources and assimilate the waste produced by humans. When the ecological footprint surpasses the biocapacity, an area experiences a deficit because the ecosystem cannot regenerate quickly enough to meet the demands. Earth's resources serve as a shared foundation for humanity, and if we overconsume, we deplete the resources that future generations rely upon. The Global Footprint Network (GFN) tracks changes in the ecological footprint and biocapacity of each country over time. By examining the charts, we can draw conclusions about the economic, social, and environmental changes occurring in different countries.

TASK

Each participant will receive a country card (see attachments) and assume the role of a citizen from that country. The cards should not be revealed to one another. The objective is to create a footprint that is proportional to the ecological

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footprint of the average citizen of their assigned nationality, as indicated on their respective cards. Highlight the data on the card that represents the „shoe size.”

To create the footprint, participants only need to make a slipper for one foot. They should draw and cut out the footprint according to the numbers on their cards. Then, they can make a strap and attach it to the footprint using glue or staples. If time permits, they can also decorate their slippers.

Once everyone has completed their slippers, they should put them on their feet and walk around or form a circle based on the size of their footprints. Using the size of the footprints as a clue, participants can try to guess each other's nationalities. After some guessing, they can assist one another by imitating a custom or habit from the given country. Flags representing the countries can also be created to aid in identifying nationalities. Participants can be divided into groups based on continents.

On the ground, create or draw a standard footprint measuring 1.8 gha (25 cm long, 8 cm wide). This represents the amount each person would receive if Earth's resources were distributed equally. Compare the individual footprints to this standard one. Whose footprint is larger, and what could be the reason behind it? What are the items or resources consumed more by those with larger footprints compared to those with smaller footprints?

RESOURCES

Tomcsányi, Zs.: Ökolábnyom, avagy mennyi jut a tortából. In Neumayer, É., Zentai K. et al (2020): Fogyasztó kúra, p. 65-78. Magosfa Alapítvány, Vác

